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L_s = the volume of coating solids consumed (liters)
M_d = the mass of VOC-solvent added to coatings (kilograms)
M_o = the mass of VOC-solvent in coatings consumed, as received (kilograms)
M_r = the mass of VOC-solvent recovered by emission control device (kilograms)
N=the volume-weighted average mass of VOC emissions to atmosphere per unit volume of coating solids applied (kilograms per liter of coating solids)
Q_a = the volumetric flow rate of each gas stream leaving the control device and entering the atmosphere (dry standard cubic meters per hour)
Q_b = the volumetric flow of each gas stream entering the control device (dry standard cubic meters per hour)
R=the overall emission reduction efficiency for an affected facility (fraction)
S_e = the fraction of VOC in coating and diluent VOC-solvent emitted at the coater and flashoff area for a coating operation
S_h = the fraction of VOC in coating and diluent solvent emitted at the cure oven for a coating operation
V_s = the proportion of solids in each coating, as received (fraction by volume)
W_o = the proportion of VOC in each coating, as received (fraction by weight).

[48 FR 38737, Aug. 25, 1983, as amended at 65 FR 61763, Oct. 17, 2000]

§ 60.492 Standards for volatile organic compounds.

On or after the date on which the initial performance test required by § 60.8(a) is completed, no owner or operator subject to the provisions of this subpart shall discharge or cause the discharge of VOC emissions to the atmoshpere that exceed the following volume-weighted calendar-month average emissions:

(a) 0.29 kilogram of VOC per litre of coating solids from each two-piece can exterior base coating operation, except clear base coat;

(b) 0.46 kilogram of VOC per litre of coating solids from each two-piece can clear base coating operation and from each overvarnish coating operation; and

(c) 0.89 kilogram of VOC per litre of coating solids from each two-piece can inside spray coating operation.

§ 60.493 Performance test and compliance provisions.

(a) Section 60.8(d) does not apply to monthly performance tests and § 60.8(f) does not apply to the performance test procedures required by this subpart.

(b) The owner or operator of an affected facility shall conduct an initial performance test as required under § 60.8(a) and thereafter a performance test each calendar month for each affected facility.

(1) The owner or operator shall use the following procedures for each affected facility that does not use a capture system and a control device to comply with the emission limit specified under § 60.492. The owner or operator shall determine the VOC-content of the coatings from formulation data supplied by the manufacturer of the coating or by an analysis of each coating, as received, using Method 24. The Administrator may require the owner or operator who uses formulation data supplied by the manufacturer of the coating to determine the VOC content of coatings using Method 24 or an equivalent or alternative method. The owner or operator shall determine from company records the volume of coating and the mass of VOC-solvent added to coatings. If a common coating distribution system serves more than one affected facility or serves both affected and exiting facilities, the owner or operator shall estimate the volume of coating used at each facility by using the average dry weight of coating, number of cans, and size of cans being processed by each affected and existing facility or by other procedures acceptable to the Administrator.

(i) Calculate the volume-weighted average of the total mass of VOC per volume of coating solids used during the calendar month for each affected facility, except as provided under paragraph (b)(1)(iv) of this section. The volume-weighted average of the total mass of VOC per volume of coating solids used each calendar month will be determined by the following procedures.

(A) Calculate the mass of VOC used (M_o+M_d) during the calendar month for the affected facility by the following equation:

$$M_o + M_d = \sum_{i=1}^{n} L_{ci} D_{ci} W_{oi} + \sum_{j=1}^{m} L_{dj} D_{dj}, \qquad (1)$$

[$\Sigma L_{dj} D_{dj}$ will be 0 if no VOC solvent is added to the coatings, as received.] where n is the number of different coatings used during the calendar month and m is the number of different diluent VOC-solvents used during the calendar month.

(B) Calculate the total volume of coating solids used (L_s) in the calendar month for the affected facility by the following equation:

$$L_s = \sum_{i=1}^{n} L_{ci} V_{si}, \qquad (2)$$

where n is the number of different coatings used during the calendar month.

(C) Calculate the volume-weighted average mass of VOC per volume of solids used (G) during the calendar month for the affected facility by the following equation:

$$G = \frac{M_o + M_d}{L_s} \qquad (3)$$

(ii) Calculate the volume-weighted average of VOC emissions discharged to the atmosphere (N) during the calendar month for the affected facility by the following equation:

$$N = G. \qquad (4)$$

(iii) Where the value of the volume-weighted average mass of VOC per volume of solids discharged to the atmosphere (N) is equal to or less than the applicable emission limit specified under § 60.492, the affected facility is in compliance.

(iv) If each individual coating used by an affected facility has a VOC content equal to or less than the limit specified under § 60.492, the affected facility is in compliance provided no VOC-solvents are added to the coating during distribution or application.

(2) An owner or operator shall use the following procedures for each affected facility that uses a capture system and a control device that destroys VOC (e.g., incinerator) to comply with the emission limit specified under § 60.492.

(i) Determine the overall reduction efficiency (R) for the capture system and control device.

For the initial performance test, the overall reduction efficiency (R) shall be determined as prescribed in paragraphs (b)(2)(i) (A), (B), and (C) of this section. In subsequent months, the owner or operator may use the most recently determined overall reduction efficiency for the performance test providing control device and capture system operating conditions have not changed. The procedure in paragraphs (b)(2)(i), (A), (B), and (C) of this section, shall be repeated when directed by the Administrator or when the owner or operator elects to operate the control device or capture system at conditions different from the initial performance test.

(A) Determine the fraction (F) of total VOC used by the affected facility that enters the control device using the following equation:

$$F = S_e H_e + S_h H_h, \qquad (5)$$

where H_e an H_h shall be determined by a method that has been previously approved by the Administrator. The owner or operator may use the values of S_e and S_h specified in table 1 or other values determined by a method that has been previously approved by the Administrator.

TABLE 1—DISTRIBUTION OF VOC EMISSIONS

Coating operation	Emission distribution	
	Coater/ flashoff (S_e)	Curing oven (S_h)
Two-piece aluminum or steel can:		
Exterior base coat operation	0.75	0.25
Overvarnish coating operation ...	0.75	0.25
Inside spray coating operation ...	0.80	0.20

(B) Determine the destruction efficiency of the control device (E) using values of the volumetric flow rate of each of the gas streams and the VOC content (as carbon) of each of the gas streams in and out of the device by the following equation:

$$E = \frac{\sum_{i=1}^{n} Q_{bi} C_{bi} - \sum_{j=1}^{m} Q_{aj} C_{aj}}{\sum_{i=1}^{n} Q_{bi} C_{bi}}, \qquad (6)$$

where n is the number of vents before the control device, and m is the number of vents after the control device.

(C) Determine overall reduction efficiency (R) using the following equation:

$$R = EF \qquad (7)$$

(ii) Calculate the volume-weighted average of the total mass of VOC per volume of coating solids (G) used during the calendar month for the affected facility using equations (1), (2), and (3).

(iii) Calculate the volume-weighted average of VOC emissions discharged to the atmosphere (N) during the calendar month by the following equation:

$$N = G \times [1 - R] \qquad (8)$$

(iv) If the volume-weighted average of mass of VOC emitted to the atmosphere for the calendar month (N) is equal to or less than the applicable emission limit specified under §60.492, the affected facility is in compliance.

(3) An owner or operator shall use the following procedure for each affected facility that uses a capture system and a control device that recovers the VOC (e.g., carbon adsorber) to comply with the applicable emission limit specified under §60.492.

(i) Calculate the volume-weighted average of the total mass of VOC per unit volume of coating solids applied (G) used during the calendar month for the affected facility using equations (1), (2), and (3).

(ii) Calculate the total mass of VOC recovered (M_r) during each calendar month using the following equation:

$$M_r = L_r D_r \qquad (9)$$

(iii) Calculate overall reduction efficiency of the control device (R) for the calendar month for the affected facility using the following equation:

$$R = \frac{M_r}{M_o + M_d} \qquad (10)$$

(iv) Calculate the volume-weighted average mass of VOC discharged to the atmosphere (N) for the calendar month for the afffected facility using equation (8).

(v) If the weighted average of VOC emitted to the atmosphere for the calendar month (N) is equal to or less than the applicable emission limit specified under §60.492, the affected facility is in compliance.

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§60.494 Monitoring of emissions and operations.

The owner or operator of an affected facility that uses a capture system and an incinerator to comply with the emission limits specified under §60.492 shall install, calibrate, maintain, and operate temperature measurement devices as prescribed below.

(a) Where thermal incineration is used, a temperature measurement device shall be installed in the firebox. Where catalytic incineration is used, temperature measurement devices shall be installed in the gas stream immediately before and after the catalyst bed.

(b) Each temperature measurement device shall be installed, calibrated, and maintained according to the manufacturer's specifications. The device shall have an accuracy of 0.75 percent of the temperature being measured, expressed in degrees Celsius, or ±2.5 °C, whichever is greater.

(c) Each temperature measurement device shall be equipped with a recording device so that a permanent continuous record is produced.

[48 FR 38737, Aug. 25, 1983, as amended at 65 FR 61763, Oct. 17, 2000]

§60.495 Reporting and recordkeeping requirements.

(a) The owner or operator of an affected facility shall include the following data in the initial compliance report required under §60.8(a).

(1) Where only coatings which individually have a VOC content equal to or less than the limits specified under